EXECUTIVE SUMMARY

This International Space Research Park (ISRP) Environmental Impact Statement (EIS) has been prepared for the National Aeronautics and Space Administration (NASA). The purpose of this report is to assess the environmental consequences associated with the proposed development of the ISRP, which is intended to bring new research and development (R&D) uses to John F. Kennedy Space Center (KSC) in Brevard County, Florida. This EIS has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508); and the Procedures for Implementation of NEPA for NASA (CFR Title 14 Part 1216 subpart 1216.3).

NASA has entered into an agreement with the State of Florida, through the Florida Space Authority (FSA), to jointly study the development of up to 160 hectares (ha) (400 acres (ac) of land on KSC as a research park. This summary presents an overview of the analysis contained in the EIS. This chapter summarizes the major conclusions of the EIS, including, 1) preferred alternative and alternatives; 2) areas of controversy; 3) significant impacts; 4) unavoidable significant impacts and 5) implementation of mitigation measures.

Project and Alternatives

1. Study Area

Kennedy Space Center is 56,500 ha (139,490 ac) of land controlled by NASA within Brevard and Volusia Counties. The study area that was analyzed included KSC, Brevard County, and the five adjoining counties (Indian River, Orange, Osceola, Seminole, and Volusia Counties) (Figure 1-1). The proposed ISRP alternative sites are located on KSC along the south portion of Kennedy Parkway South (i.e., State Road 3), the major north-south transportation arterial that allows public ingress and egress through KSC into Merritt Island and Titusville.

2. Project Alternatives

This EIS analyzed three alternatives for the proposed action. Two of the three alternative actions evaluated environmental impacts of the development and operation of the ISRP at two locations on KSC (Figure 1-2). The third No Action Alternative was analyzed for the potential environmental consequences that may result if the proposed action is rejected (or not recommended) and present management of the land continues.

Alternative 1: Preferred Action. Alternative 1 proposes the development of the ISRP on approximately 140 hectares (ha) (345 acres (ac)) of KSC property. This development and related construction activities would occur on land located immediately south of the KSC Visitors Complex along the recently constructed Space Commerce Way. About 130 ha (321 ac) of the development would occur on the west side of Space Commerce Way (Phases A-E). Phase F would occur on a 10 ha (24 ac) parcel east of Space Commerce Way, adjacent to and west of the Space Life Science Laboratory (SLSL) (Figure 2-1). The site is dominated by citrus groves and includes remnant wetlands and disturbed habitats.

Development, at this site, plans for 25 parcels in six phases serviced by approximately 4.5 kilometers (km) (2.8 miles (mi)) of roads. The parcels range from 1.8 to 10.2 ha (4.5 to 25.3 ac) in size with developable acreage between 1.8 and 6.2 ha (4.5 and 15.4 ac). Some parcels have dedicated no-build zones due to existing wetlands and stormwater ponds, which would be part of the master stormwater system for the park. The proposed stormwater management system includes 10 connected treatment ponds for the collection and treatment of runoff generated from the developed parcels. Parcels would be developed with an overall 35 percent open space. This includes a central greenway, which would offer sidewalks and pedestrian access, along wetlands and stormwater retention areas.

Alternative 2: Alternative Action. Alternative 2 proposes construction and development of the ISRP on approximately 130 ha (321 ac) located northeast of the KSC south security gate (Gate #2) on Kennedy Parkway (State Road 3), near B Avenue SW (or Tel-4 Road). This alternative also considered the Phase F development of 10 ha (24 ac) east of Space Commerce Way, adjacent to and west of the SLSL (Figure 2-1). This undeveloped landscape is characterized by extensive scrub habitat and wetlands.

Development, at this site, plans for 26 parcels in six phases serviced by approximately 4.2 (km) (2.6 (mi)) of roads. The 25 parcels proposed for development range in size from 1.6 to 10.0 ha (4.0 to 24.0 ac) with developable acreage from 1.5 to 5.6 ha (3.7 to 13.8 ac). One 34.7 ha (85.7 ac) parcel is an extensive wetlands system that would be set aside for wetland conservation. Four stormwater management ponds are proposed for the collection and treatment of runoff generated from the developed parcels. The Alternative 2 land use plan offers extensive greenways and sidewalks for pedestrian access, along the wetland conservation area and between parcels.

Alternative 3. No Action Alternative. Under the No Action Alternative, the ISRP would not be developed on KSC. This No Action Alternative would result in continuing present management of the area by KSC. The citrus groves, abandoned or under contract through 2008, would eventually revert to natural vegetation as part of KSC's undeveloped buffer and be managed by USFWS. The No Action Alternative is required by NEPA (40 CFR 1500) and serves as a baseline from which to compare the impacts of Alternative 1 and 2.

3. Purpose and Need

The ISRP is intended to provide for complementary research and development (R&D) objectives, Cape Canaveral Spaceport (CCS) mission enhancement, public-private partnership opportunities, and space commercialization and development. As a center for R&D, the ISRP would bring together a dynamic mix of industry, academia, and government researchers to focus their combined strengths in areas of R&D critical to the long-term success of NASA and its partners. The mission of the FSA is to retain, expand and diversify the state's space-related industry. KSC, which is located in Brevard County on the east coast of Florida, is a major locus within NASA for the Space Shuttle and International Space Station (ISS) activities and is adjacent to Cape Canaveral Air Force Station (CCAFS) from which many NASA missions are launched.

NASA seeks collaborators for funding and project implementation to meet its mission. As many of the previously discussed support activities require proximity to the launch and payload-processing infrastructure of KSC, they need to be geographically located on

KSC property. However, non-governmental organizations also need greater flexibility regarding access and operational constraints than are currently available at KSC. Therefore, NASA has determined a need for a location on KSC that will provide a more commercial environment. The commercial proposed action would authorize the State of Florida (though the statutory provisions of the management entities of the ISRP), to manage an area of land while remaining in contact with the infrastructure available at KSC. Without this option, most if not all these commercial and educational entities would be unable to construct and operate facilities.

Issues Identified During Scoping

Public involvement is one of the key elements of NEPA compliance (40 CFR §1506.6) and is highly encouraged by NASA. On October 3, 2002 NASA issued the Notice of Intent (Public Notice (02-121)) to prepare an EIS and conduct scoping meetings for the proposed ISRP. Three (3) public scoping meetings were conducted. All responses received from interested parties during the 45-day scoping period (October 3, 2002 through December 9, 2002) are presented in Appendix B of the EIS. The primary concerns raised by commenting public were in regards to traffic, security, economic sustainability, and environmental sensitivity (e.g., species and wetlands).

Potential Areas of Significant Impact

Implementation of the ISRP has the potential to generate environmental impacts related to the atmospheric environment, soils, hydrology and surface water, and biological resources within KSC. Impacts presented in Table ES-1, could be significant without the implementation of mitigation measures. Most impacts would be reduced to a less-than-significant level if the mitigation measures recommended in this report were implemented.

Mitigation Measures

This EIS suggests specific mitigation measures that would reduce most impacts identified to a less-than-significant level (Table ES-1).

Significant Unavoidable Impacts

The significant unavoidable consequences that would occur with implementation of the Preferred Alternative 1 (Phases A-F) and Alternative 2 (Phases A-F) include:

GEO-1: Construction of the proposed ISRP would change the soil composition, structure, and function within the specific initial construction and development site due to the construction activities of moving and adding soils to the site.

BIO-2: Filling of jurisdictional wetlands would eliminate existing functional attributes of these regulated habitats and result in a violation of The Florida Water Resources Act of 1972 (Part IV of Chapter 373, F.S. and Chapter 62-40, FAC) and Section 404 of the Federal Clean Water Act. Mitigation would be required to offset expected impacts.

BIO-7: The cumulative effects of habitat fragmentation from habitat loss from development and introduction of new roads and increased human presence could cause

the mortality and/or substantial harassment of numerous individual eastern indigo snakes. Mitigation may be required to offset expected impacts.

The significant unavoidable consequences that would occur with the implementation of Alternative 2 (Phases A-E) include:

BIO-5: The direct and indirect effects of the loss of critical Florida Scrub-jay and eastern indigo snake habitat from development could result in individual mortality due to habitat displacement, including, but not limited to, increased predation and vehicular collisions. Development could not proceed without procurement of an Incidental Take Statement (ITS) from the USFWS for these species under the terms of Section 7(a)(2) and Section 7(b)(4) of the ESA.

BIO-6: The direct and indirect effects of the loss of critical gopher tortoise habitat could cause individual mortality of gopher tortoises and listed commensals if occupied burrows were destroyed or lead to adverse indirect effects of habitat displacement to these listed species, (i.e., increased predation and vehicular collisions). Development could not proceed on the Alternative 2 site until a permit, pursuant to the requirements of Rules 68A-25.002, FAC and 68A-27.005, FAC, is secured.

Systems of Measurement

NASA policy dictates that all measurements should be presented in metric units. Throughout the EIS, the English measurement follows the metric number in parenthesis. For example, the size of a particular building would be listed as 9,000 square meters (m^2) (100,000 square feet (ft^2)).

A standardized spatial data format was adopted for all data layers generated for this EIS. The data structure incorporates strict national data standards and is in compliance with Federal Geographic Data Committee (FGDC) geospatial data standards. All data files are in State Plane North American Datum (NAD) 1983. The map units are in meters (m) or kilometers (km).

Summary Table

Table ES-1 presents a summary of impacts and mitigation measures identified in this report. Impacts area referenced in this table as they appeared throughout the EIS.

Table ES-1. Summary of Impacts and Mitigation Measures.

Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
Land Use: There are no significant impacts or mitigation measures for land use.	ALT-1, ALT-2 and Phase F	LTS	None	LTS
ATM-1: Construction activity would generate Particulate Matter (PM) and Particulate Matter < 10 microns in diameter (PM10) that could significantly impact the quality of the air within the local region.	ALT-1, ALT-2 and Phase F	S	FDEP regulatory guidance suggests that the most effective way to evaluate construction-generated air quality impacts should emphasize implementation of effective and comprehensive control measures rather than detailed quantification of construction PM emissions. The potential emissions for unconfined particulate matter in general come from, but are not restricted to, vehicular movement, transportation of materials, demolition, modification, and construction projects within KSC. The following are reasonable precautions to control unconfined emissions of particulate matter: restricted speed limit on unpaved roads to prevent excess emission of particulate matter, application of water as needed during construction activities to control excessive airborne particulate matter, providing enclosure or canopy covering for material stockpiling and transportation whenever possible and practical, and confine or enclose, whenever practical, those activities which may cause airborne particulate matter, the PM and PM10 emissions would be well below the significance level of 5 tons per year and would have a negligible air quality impact.	LTS

ALT = Alternative (Phases A-E); LTS = Less than Significant; S = Significant; SU = Significant Unavoidable Impacts

Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
ATM-2: The use of controlled burns without air curtains, to dispose of ground cover and construction debris from land clearing activities would violate regulations pursuant of Rules 62-256, FAC	ALT-1, ALT-2 and Phase F	S	Open burning regulations are contained in Chapter 62-256, FAC The FDEP and the Florida Department of Forestry are the primary agencies regulating open burning at KSC and on MINWR. Impacts from controlled burns that use an air curtain incinerator are considered insignificant. Chapter 62-256 FAC authorizes only air curtain incinerators to be used in controlled burns of ground cover and construction debris, which are permitted by the County of Brevard. If the air curtain incinerator were properly used as prescribed in FAC 62-256, the air emissions would remain minimal with no significant impacts.	LTS
ATM-3: An increase in the number of vehicles that would be associated with the proposed development of the ISRP, combined with vehicles from KSC employees in the build out year 2020, would potentially have a significant negative impact on air quality on KSC, but would not have a significant negative impact through Brevard County and the remaining study region.	ALT-1, ALT-2 and Phase F	S	Because the potential significant decrease in air quality is estimated to be a local impact to KSC and there is no justification or need to develop a regional mass transport systems plan. The ISRP would encourage the use of the Brevard County sponsored commuter van pool systems and other public transportation systems such as SCAT. As a part of the NASA and the FSA educational outreach activities, NASA would provide educational information on the value of reducing traffic and improving air quality within KSC. These activities could be a part of the KSC Environmental Awareness Week. Title II of the CAA regulates vehicle fuels and the manufacturing of vehicle emission parameters. There are few direct mitigating actions that could be performed by NASA or FSA.	S
Ambient Noise: There are no significant impacts or mitigation measures for noise.	ALT-1, ALT-2, Phase F	LTS	None	LTS

Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
GEO-1: Construction of the proposed ISRP would change the soil composition, structure, and function within the specific initial construction and development site due to the construction activities of moving and adding soils to the site.	ALT-1, ALT-2, Phase F	SU	The impacts will be limited only to the development site and will not adversely affect the adjacent land. These impacts are unavoidable and cannot be mitigated.	SU
HYD-1: Construction and operation of the ISRP may alter surface water quality or hydrological processes, including impacts to Class II, and III waters. Hydrological processes and water quality are regulated by the Florida Water Resources Act 1972 (Part IV of Chapter 373, F.S. and Chapter 62-40, FAC) and Section 404 of the Clean Water Act.	ALT-1, ALT-2, Phase F	S	A Wetland Mitigation Plan would be required to address impacts related to wetland systems within the alternative sites. The Environmental Resources Permit addresses issues of water quality and general hydrology. Water quality monitoring may also be required as mitigation to the proposed impacts.	LTS
HYD-2: Construction and operation of the ISRP would change surface water flow patterns.	ALT-2	S	A Wetland Mitigation Plan that includes a Stormwater Management System would be required to address impacts related to surface water flow. The Environmental Resources Permit addresses issues related to the alteration of natural hydrological flow patterns.	LTS
HYD-3: Construction and operation of the ISRP would increase local evapotranspiration rates and reduce infiltration rates.	ALT-1, ALT-2 and Phase F	S	The Environmental Resources Permit, that would be required for construction of the proposed ISRP, would address issues related to the alteration of local evapotranspiration rates and reduced infiltration rates. The required wetland mitigation and Stormwater Management System would significantly reduce these hydrological impacts.	LTS

ALT = Alternative (Phases A-E); LTS = Less than Significant; S = Significant; SU = Significant Unavoidable Impacts

Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
BIO-1a: Construction vehicles could inadvertently injure or kill Federally listed species. This construction-related mortality is considered a potential significant impact to the eastern indigo snake due to its broad spatial needs, low mobility and diurnal behavior patterns.	ALT-1, ALT-2, and Phase F	S	To minimize the potential for construction-related mortality of the eastern indigo snake, NASA and its partners would implement the USFWS guidelines "Standard Protection Measures for the Eastern Indigo Snake". These guidelines are directed at educating construction personnel of the protected status of this species and providing clear instructions that reduce the likelihood for intentional or accidental injury, harm, harassment, or killing of this species.	LTS
BIO-1b: Construction vehicles could inadvertently injure or kill State listed species, primarily the gopher tortoise and listed commensals. This is considered a significant impact due to the number of individuals that could be affected and because the impact would be a violation of the Wildlife Code of the State of Florida.	ALT-2	S	A permit pursuant to Rules 68A-25.002, FAC and 68A-27.005, FAC would need to be secured from the FWC prior to the performance of any construction operations on the Alternative 2 site. Two options would be available to address potential impacts, the capture and off site relocation of the numerous tortoises and any burrow commensals or the incidental take of this species. Off-site relocation of the species into nearby suitable habitat would be recommended.	LTS

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Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
BIO-2a: Filling of jurisdictional wetlands would eliminate existing functional attributes of these regulated habitats and result in a violation of The Florida Water Resources Act of 1972 (Part IV of Chapter 373, F.S and Chapter 62-40, FAC) and Section 404 of the Federal Clean Water Act. Mitigation in the form of wetland creation or restoration, enhancement, or preservation would be required to offset expected impacts.	ALT-1 and Phase F	SU	**BIO-2a**: The functions and values of the 5.06 ha (12.5 ac) of wetlands proposed to be developed under the Alternative 1 (Phases A-F) plan were assessed to be low, therefore the corresponding mitigation requirements would be expected to be low. A wetland mitigation plan would be developed and would include: · Creation of a 2 ha (5 ac) freshwater wetland adjoining an existing 1.6 ha (4 ac) wetland, and · Enhancement, via removal of exotic plants, of approximately 18 ha (45 ac) of important hardwood hammock habitat on the Alternative 1 (Phases A-E) site. This level of wetland mitigation is predicted to sufficiently offset potential impacts resulting from proposed wetland development.	LTS
BIO-2b: Filling of jurisdictional wetlands would eliminate existing functional attributes of these regulated habitats and result in a violation of The Florida Water Resources Act of 1972 (Part IV of Chapter 373, F.S and Chapter 62-40, FAC) and Section 404 of the Federal Clean Water Act. Mitigation in the form of wetland creation or restoration, enhancement, or preservation would be required to offset expected impacts.	ALT-2 and Phase F	SU	**BIO-2b**: Under Alternative 2, a wetland mitigation plan would be developed to address proposed development impacts to 1.4 ha (3.6 ac) of high quality freshwater swale marshes, including impacts to the State protected Curtiss reedgrass. Due to the high quality of wetland functions and values, mitigation requirements are expected to be high. The potential wetland mitigation plan for the Alternative 2 (Phases A-F) site would include: · Creation of the 2 ha (5 ac) freshwater wetland adjoining the existing 1.6 ha (4 ac), and · Development and implementation of a long-term comprehensive management program that would provide for the application of periodic prescribed fire, exotic plant species management, hydrological monitoring, and faunal concerns related to fragmentation.	LTS

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Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
BIO-3: Construction runoff into preserved wetlands could cause indirect impacts to water quality.	ALT-1 and ALT-2	S	To minimize disturbances to wetlands from this construction-related impact, construction would be avoided within the 7.6 m (25 ft) upland buffer extending from the delineated edge of preserved wetlands toward the upland. Standard BMP would be implemented to minimize runoff into these protected areas. Dewatering into the sensitive hammock wetlands and swale marshes would be prohibited.	LTS
BIO-4: Operation-related lighting along roads and in buildings within newly developed areas may impact the Federally listed bald eagle by disrupting movement and breeding behaviors.	ALT-2	S	A monitoring program, conducted in accordance with Bald Eagle Monitoring Guidelines (USFWS 2002), for any development activities occurring within 1 km (0.6 mi) of a bald eagle nest tree would be implemented to determine the eagles' response to these potential impacts. If significant changes in behaviors were found, then mitigative actions would be employed. For example, construction would be prohibited during the nesting season or nighttime lighting would be reduced to levels tolerated by the species.	LTS
BIO-5: Development within critical Florida Scrub-jay and eastern indigo snake habitat on Alternative 2 (Phases A-E) could lead to individual mortality due to adverse direct and indirect effects of habitat displacement, including, but not limited to, predation and vehicular collisions.	ALT-2	SU	Development could not proceed without procurement of an Incidental Take Statement (ITS) from the USFWS for these species under the terms of Section 7 (b)(4) and Section 7 (a)(2) of the ESA. A scrub habitat compensation plan for proposed impacts to Florida Scrub-jay or eastern indigo snake habitat would be completed in consultation with the Endangered Species Office of USFWS. Based on a historically established restoration compensation ratio of 2:1, a minimum of 146.8 ha (362.8 ac) of potential Scrub-jay habitat would be required to compensate for the loss of 73.4 ha (181.4 ac) of occupied Scrub-jay habitat and a minimum of eight Scrub-jay families. The issuance of an ITS would be contingent upon a finding of "no jeopardy" by the USFWS.	S

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Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
BIO-6: Development within critical gopher tortoise habitat on Alternative 2 (Phases A-E) could cause individual mortality of gopher tortoises and listed commensals if occupied burrows were destroyed or lead to adverse indirect effects of habitat displacement to these listed species, including, but not limited to, predation and vehicular collisions.	ALT-2	SU	The direct loss of 73.4 ha (181.4 ac) of suitable gopher tortoise habitat would have the potential to impact 125 to 206 individual gopher tortoises and numerous state listed burrow commensals, gopher frog, Florida mouse, and Florida pine snake. Development could not precede on the Alternative 2 site until a permit, pursuant to the requirements of Rules 68A-25.002, FAC and 68A-27.005, FAC, is secured authorizing the incidental take or relocation of gopher tortoises, including any encountered State-listed commensal species. Relocation of affected species to a suitable off site habitat is recommended to minimize impacts to the species.	LTS
BIO-7: Cumulative impacts of habitat fragmentation from habitat loss and introduction of new roads and increased human presence could cause the mortality or substantial harassment of numerous individual eastern indigo snakes. Over time, this impact could negatively influence population viability.	ALT-1, ALT-2, Phase F	SU	To minimize the potential for injury or death of eastern indigo snakes over time NASA could: · Implement an education program to informing employees about the eastern indigo's protected status and consequences of violating these laws, its high susceptibility to road mortality, its beneficial roles, and its general gentle disposition towards humans (Breininger et al. 1994), · Design new roads and retrofit, where practicable, existing roads to provide underpasses for movement between habitats. The latter action would also be expected to benefit other important wide-ranging wildlife, or · Establish a monitoring program to evaluate the effectiveness of the underpasses and address needed demographic data gaps to enable future establishment of sound conservation strategies.	LTS

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Description of Impacts	Applicable to Alternative(s)	Significance Before Mitigation	Mitigation Measures	Significance With Mitigation
Socioeconomics: There are no significant impacts or mitigation measures for socioeconomics.	ALT-1, ALT-2, Phase F	LTS	None	LTS
Cultural Resources: There are no significant impacts or mitigation measures for historical or archeological resources.	ALT-1, ALT-2, Phase F	LTS	None	LTS

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